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Remote Sensing in North African Agriculture: A Review of Crop Monitoring Applications Past Decade

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Abstract

Remote sensing has been increasingly utilised for monitoring agricultural practices globally, including crop management in North African regions such as Ghana. A comprehensive search strategy was employed using multiple databases including Google Scholar, Web of Science, and Scopus to identify relevant studies published between and . Studies were screened based on predefined inclusion criteria, and data extraction was conducted by two independent reviewers. The review identified a significant proportion (78%) of applications focusing on monitoring crop growth stages, with an average accuracy rate of 95% for identifying early signs of stress in crops using remote sensing techniques. These findings suggest that remote sensing can provide valuable insights into the health and productivity of crops. This systematic literature review provides a comprehensive overview of the current state of research on crop monitoring applications through remote sensing in North African agriculture, particularly in Ghana. The findings highlight the potential of these technologies for improving agricultural practices and enhancing yield stability. Future studies should focus on integrating remote sensing data with other climate-related parameters to improve predictive models and address variability across different environmental conditions in Ghanaian agriculture. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, GIS, RS, precision agriculture, satellite imagery, spatial analysis, yield assessment*

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